



DISTRICT OF COLUMBIA
ENERGY OFFICE

SUSTAINABLE SOLUTIONS DIVISION

REQUEST FOR APPLICATIONS (RFA)

RFA # REDP - 11072005

The District of Columbia Renewable Energy Demonstration Project

Application Submission Deadline: March 3, 2006; 4:00 p.m. DST

LATE APPLICATIONS WILL NOT BE FORWARDED TO THE REVIEW PANEL



GOVERNMENT OF THE
DISTRICT OF COLUMBIA

Anthony A. Williams, Mayor

Checklist for Applications

1. The applicant organization/entity has responded to all sections of the Request for Application.
2. The Applicant Profile, found in Attachment A, contains all the information requested and is attached on the outside envelope as the Face Sheet. Applications without this profile attached to the front of the sealed envelope will not be forwarded to the review panel.
3. The Program Budget is complete and complies with the Budget forms listed in Attachment B of the RFA. The line item budget narrative is complete and describes the categories of items proposed.
4. **The application is printed on 8 1/2 by 11-inch paper, double-spaced, on one side, using 12-point type with a minimum of one inch margins.** Applications that do not conform to this requirement will not be reviewed.
5. The RFA is submitted in a sealed envelope. Sealed response **must be** clearly identified on the outside of the envelope " *Application in to Renewable Energy Demonstration Project Grant RFA #REDP- 01032005*" (see Section III). **Unsealed and Unidentified Responses Will Not Be Accepted.**
6. The proposal summary section is complete and is within the 7-page limit for this section of the RFA submission.
7. The program goals and objectives section is complete and is within the 8-page limit for this section of the RFA submission.
8. The project description section is complete and is within the 15-page limit for this section of the RFA submission.
9. The applicant is submitting the required six (6) copies of its proposal; of the six (6) copies, one (1) copy **must** be identified as the original. If the applicant fails to submit the required six (6) copies with one of the six stamped "original", the application **will not** be reviewed.
10. The application proposal format conforms to the "Proposal Format" listed in Section V, page 11 of the RFA. Applications that do not conform to the proposal format **will not** be reviewed.
11. The appropriate appendices (if applicable), including program descriptions, licenses (if applicable), and other supporting documentation are enclosed.
12. The application is submitted to The DC Energy Office/Sustainable Solutions Division (2000 14th Street, N.W., Suite 603-H) no later than 4:00pm EST, on the deadline date March 3, 2006 to LaKeisha Estep.

**Checklist for Applications
(Continued)**

13. The application is submitted with two original receipts, found in Attachment I, attached to the outside of the envelope or package for DCEO's approval upon receipt.
14. **Applications accepted at or after 4:01 p.m. EST, will not be forwarded to the Review Panel for funding considerations. Any additions or deletions to an application will not be accepted after the deadline of 4:00 p.m. Applicants will not be allowed to assemble application materials on the premises of DCEO. Applications must be ready for receipt by DCEO.**

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SECTION I GENERAL INFORMATION

Introduction

The District of Columbia Renewable Energy Demonstration Project (REDP) has been developed to increase the awareness and the use of renewable electricity generation technologies by District of Columbia residents, businesses, and institutions.

The DC REDP will provide qualified applicants up to 50% of the costs associated with implementing a mechanism to produce electricity using a renewable source of fuel.

Grant Awards and Amounts

A total of \$163,000 is available to fund projects not to exceed 50% of the total cost associated with the project. There is a possibility that more funding will become available, once that information is confirmed all applicants will be notified. *Please note: Any applications submitted requesting more than 50% of the total project cost will not be forwarded to the review panel.

Target Population

The target population for the Renewable Energy Project is the residents, businesses, and institutions in the District of Columbia.

Eligible Organizations/Entities

The following organizations/entities are eligible to apply for DC Renewable Energy Demonstration Project grant funds under this Request for Application:

- Individuals
- Organizations
- Businesses
- Schools
- Public Agencies

Non-Eligible Organizations/Entities

The following organizations/entities are **not** eligible to apply for DC Renewable Energy Demonstration Project grant funds under this Request for Application:

- Federal Government
- Electricity companies
- Electricity suppliers

Eligible Projects

Eligible projects include any renewable electricity generation apparatus that will be located within the District of Columbia where construction has not begun. Each applicant should provide evidence to show that (1) it is established and has a recent history of demonstrated accomplishments in similar realms and evidence of structure or (2) the equipment, apparatus, or mechanism that is to be installed has been tested and assured to produce the desired result. Each applicant should also provide evidence of resources and management procedures sufficient to implement the proposed project and provide project accountability. Collaborations/coalitions are encouraged to apply for these funds, but must submit the appropriate number of Collaboration/Partner Commitment Forms. (See Attachment C).

Source of Grant Funding

The source of this grant fund is the Reliable Energy Trust Fund, which is administered through the DC Energy Office and overseen by the DC Public Service Commission. Any individual, group, organization, or business that has a direct association with either the DC Public Service Commission, the DC Energy Office, or is associated with the oversight of this grant is ineligible to apply for grant funds under the Renewable Energy Demonstration Project Grant.

Award Period

The grant awards will be for a period of one (1) year from date of award. Provided the applicant successfully meets the performance objectives, DCEO may extend the terms of this grant. The total duration of this grant, including any continuations under this provision, shall not exceed three years.

Contact Person

For further information, please contact:

LaKeisha Estep
Energy Program Specialist
Sustainable Solutions Division
DC Energy Office
2000 14th Street, N.W.
Suite 300 East
Washington, DC 20009
202-671-1403 Office

Pre-Submission Conference

The Pre-Submission Conference will be held Tuesday, January 31, 2006, from 10:00 a.m. to 11:30 a.m., in the DPW Conference Room, 2000 14th Street, N.W., 6th Floor East, Washington, DC 20009.

Explanations to Prospective Applicants

Applicants with questions pertaining to the RFA are encouraged to contact the person listed above on or after January 31, 2006.

SECTION II PROGRAM SCOPE

Applicants responding to this RFA shall provide (1) innovative approaches to generating electricity using renewable resource or (2) use apparatus that are know to generate a reasonable amount of electricity using a renewable resource, which are based on the science-based principles, practices, and models described below. Each section in the Program Scope provides the necessary background and technical information to propose a science-based renewable energy demonstration. Applicants should prepare their applications based on the information provided in the Program Scope, the Scoring Criteria outlined in Section IV of this RFA, and Attachment.

Definition of Science-Based Models

Science-based information is that which has been identified and/or substantiated through an expert consensus or analytical process using commonly agreed upon criteria for rating research. A project would also be considered science based if the manufacturer has substantiated the effectiveness of the product that an applicant intends to use as the basis for their renewable energy demonstration.

Requirement 1

The demonstration project's source documents show that (1) the manufacturer has identifiable expectations of the capability of the product(s) used to create the demonstration project or (2) have undergone thorough scrutiny in an expert/peer consensus process for the quality of implementation and evaluation methods.

Requirement 2

The demonstration must be replicable. Replications of the demonstration project must be feasible financially and mechanically.

Risk and Protective Factors

Applicants must identify any risk factors associated with the demonstration project. These risk factors may include but are not limited to:

- Runoff
- Mechanical emissions
- Structural hazards
- Location hazards

Specific Applicant Responsibilities

1. The applicant shall conduct a needs assessment and a resource assessment within the community in which the demonstration project will be located. Specifically addressing if there is similar technology in the area, what visual affects it will have on the community landscape, the impact on the electric load where the demonstration project will be located, and the impact on the natural environment of the community where the demonstration project will be located.
2. The applicant shall describe the specific risk and protective factors for the demonstration project and the location where the project will be located.

3. The applicant shall make the demonstration project available for viewing and replication for two years after the projects completion.
4. The applicant shall conduct an ongoing evaluation through which specific demonstration project indicators will be tracked. If selected, the applicant must be willing to participate in an evaluation conducted by The DC Energy Office and its evaluation contractor. The applicant shall include with the submission an evaluation plan which addresses the following:
 - Goals and objectives of the demonstration project
 - Energy needs of the location of the demonstration project
 - Electricity production of the demonstration project
 - Amount of traditionally generated electricity offset by the demonstration project
 - Data collection methodology

System Sizing for PV Projects

The easiest approach is to select an off-the-shelf system that is designed to power what you want or that already has PV power and is designed for your application. If you can't find something that fits your needs, you will need to use a simple routine to size your load.

After you have determined your application, look at the equipment and appliances you need to power. Their labels provide the power (watts) consumed, voltage and current ratings, and other information by which you determine their loads on the system. Make a list of equipment and the actual power consumed, including number of hours of operation and any cycling.

Next, using your list of equipment, add up the total watt-hours of energy consumed per day. You will use this to determine how much PV you need.

Using the solar radiation charts in Section 17, determine the amount of solar energy in kWh/m²/day for your location and system configuration. Use a rule-of-thumb conversion factor: 100 watts equals one square meter, which relates to a 10 % efficiency conversion. Using this rule, the solar radiation factor is equivalent to the number of hours of full sun in a day, which translates to the size of the PV array in watts.

Now, divide the load in watt-hours/day by the radiation factor or full sun hours. This gives you the size of the PV array in watts. You now have the size of the PV array in watts to within 10 to 20% of actual value. The actual design and components used in the PV system determine the actual performance.

For example:

1000 watt-hour/day load

4.8 kwh/m²/day average available solar energy for Daytona Beach for the year at 0 degree tilt

Array size (watts) = $1000/4.8 = 208$

Now you have an estimate of the wattage of the PV system you need for your application. With this information, you can estimate the cost, physical size, and other factors you need to make an informed decision.

SECTION III SUBMISSION OF APPLICATIONS

Application Identification

Six (6) copies, one marked original and five (5) copies, of the **proposal are to be submitted in a sealed envelope or package conspicuously marked “DCEO Renewable Energy Demonstration Project”**. Of the six (6) copies, one (1) application must be an original. Applications received without a marked original copy will not be forwarded to the review panel.

Telephonic, telegraphic and facsimile submissions will not be accepted.

Application Submission Date and Time

Applications are due no later than 4:00 p.m. EST, on March 3, 2006. All applications will be recorded upon receipt. Applications received at or after 4:01 p.m., EST on March 3, 2006 will not be forwarded to the review panel.

Six (6) copies of the proposal must be delivered to the following location:

LaKeisha Estep
Energy Program Specialist
Sustainable Solutions Division (SSD)
DC Energy Office
2000 14th Street, N.W.
Suite 603 H
Washington, DC 20009

Mail/Courier/Messenger Delivery

Applications that are mailed or delivered by Messenger/Courier services **must be** sent in sufficient time to be received by the 4:00 p.m. EST deadline on March 3, 2006, at the above location. The **Sustainable Solutions Division will not accept applications arriving via messenger/courier service at or after 4:01 p.m.**

LATE APPLICATIONS WILL NOT BE FORWARDED TO THE REVIEW PANEL.

SECTION IV REVIEW AND SCORING OF APPLICATIONS

Review Panel

The partners involved in making the DC REDP a success are the DC Energy Office (program lead), Potomac Electric Power Company (PEPCO), Office of the People’s Counsel, Public Technology Inc., a community based organization, each interested licensed electricity supplier, and representatives of any other interested members of the RETF working group. These organizations will form the review panel that will review program application materials, select the recipient(s), and review program reports of the DC REDP.

Scoring Criteria

Any applications submitted requesting more than 50% of the total project cost will not be forwarded to the review panel. Applicants' proposal submissions will be objectively reviewed against the following specific scoring criteria.

Criterion A Technology (Total 25 Points)	
1.0	Not applicable
2.0	Not applicable
3.0	Not applicable
4.0	Not applicable
5.0	Not applicable

The technologies that will be considered include, but are not limited to: solar, wind, geothermal, biomass, and small hydroelectric. A resource is called renewable if it can be naturally replenished. In general, renewables have lower emissions than non-renewables.

Criterion B Duplicable (Total 20 Points)

The projects selected for this program must be able to be reproduced in another venue/area. The project must show how it can be reproduced either to scale, on a larger scale or smaller scale.

Criterion C Environmentally benign/friendly **(Total 15 Points)**

Consideration is being given to the environmentally benign/friendly qualities of each project. Although renewable energy is preferable because it diminishes the need to rely on fossil fuels, not all renewable sources of energy are environmentally benign. The project must detail what effect(s) it will have on air quality, storm water, and physical environment (trees, land, and structures).

Criterion D Budget (Total 10 Points)

The budget must detail how much the primary elements of the project will cost. Additional consideration will be given to projects that request less than the full grant amount. The budget should include (but is not limited to):

- Cost for personnel
- Equipment
- Installs
- Fees
- Construction.

Criterion E Education Component

(Total 10 Points)

One of the goals of the REDP is to make the information gained through individual project available to the public in hopes of replicating the project or influence other renewable projects in the District. Projects must have two open houses to showcase the project and material to explain the project such as brochures and white papers.

Criterion H Location

(Total 10 Points)

Projects located in industrial or low-income areas will be given additional consideration.

Criterion F Net Metering

(Total 5 Points)

Projects that involve net metering could supply electricity to other portions of the District and possibly offset some of the generation that is required from traditionally fueled generators.

Criterion G Residential

(Total 5 Points)

Projects located on or used to provide electricity for a residential structure(s) will offset the use and dependency on the traditional sources of electricity available in the District.

Decision on Awards

A decision on awards will be made March 27 – March 31, 2006. Awardees will be notified by mail of the selection on or before March 31, 2006.

SECTION V PROPOSAL FORMAT

Applicants are required to follow the format below and each proposal must contain the following information:

- Applicant Profile (**See Attachment A, Face Sheet**)
- Table of Contents
- Application Summary
- Program Goals and Objectives
- Project Description
- Work Plan (Logic Model) (**Not counted in page total, See Attachment D**)
- Program Budget and Budget Narrative (**Not counted in page total, See Attachment B**)

The applicant's proposal may not exceed 30 double-spaced 8 1/2 by II-inch pages. Margins must be no less than one inch; a font size of 12-point is required (Times New Roman or Courier type recommended). All text must be double-spaced. Pages should be numbered. **The review panel will not review applications that do not conform to the above requirements. Applications not meeting the format requirements will be returned to the applicant without being submitted to the review panel.**

Description of Proposal Sections

The purpose and content of each section is described below. Applicants should include all information needed to adequately describe their objectives and plans for services. It is important that applications reflect continuity among the goals and objectives, program design, and work plan of activities. It is also important that the budget demonstrates the level of effort required for the proposed services.

Applicant Profile

Each application must include an Applicant Profile, which identifies the applicant, type of entity (individual, organization, etc), project location, and the amount of grant funds requested. **Applications without this profile attached to the front of the sealed envelope will not be forwarded to the review panel.** See Attachment A

Table of Contents

The Table of Contents should list major sections of the application with quick reference page indexing.

Proposal Summary

This section of the application should be brief and serve as the cornerstone of the proposal. The proposal summary should highlight the primary objectives that are discussed in depth in other sections of the application.

Programs Goals and Objectives

This section of the application should contain the objectives for achieving the specific goals of the State Incentive Grant and the needs of the population.

Project Description

This section of the application should contain the description of activities that justifies and describes the program to be implemented. The project description should include the target populations to be served and specific services to be provided.

Program Budget and Budget Narrative

Standard budget forms are provided in Attachment F. The budget for this proposal shall contain detailed, itemized cost information that shows direct and indirect costs. The detailed budget narrative shall contain a justification for each category listed in the budget. The narrative should clearly state how the applicant arrived at the budget figures.

Direct Costs

These costs generally include expenditures for space---rented or donated--- and should be comparable to prevailing rents in the surrounding geographic area. Applicants should also add in the cost of utilities and telephone services directly related to grant activities, maintenance services (if essential to the program) and insurance on the facility.

Costs for the rental, lease and purchase of equipment should be included, listing office equipment, desks, copying machines, word processors, etc. Cost for supplies such as paper, stationery, pens, computer diskettes, publications, subscriptions and postage should also be estimated.

Indirect Costs

Indirect costs are costs that are not readily identifiable with a particular project or activity but are required for operating the organization and conducting the grant-related activities it performs. Indirect costs encompass expenditures for operation and maintenance of buildings and equipment, depreciation, administrative salaries, general telephone services and general travel and supplies. Indirect costs may not exceed 10% of total project costs.

Appendices

This section may be used to provide technical material, supporting documentation and endorsements. Such items may include:

- Indication of nonprofit corporation status;
- Roster of the Board of Directors;
- Proposed organizational chart for the project;
- Letters of support or endorsements;
- Planned job tasks.

Use of Funds

Funds received under the Renewable Energy Project grant may only be used in an effort to develop and/or implement an electric generating apparatus the uses a renewable resource as fuel. The Renewable Energy Demonstration Project must also be located within the boundaries of and for the offset of electricity within Washington, DC.

SECTION VIII LIST OF ATTACHMENTS

Attachment A	Applicant Profile
Attachment B	Budget
Attachment C	Collaboration Commitment Form
Attachment D	Work Plan (Logic Model)
Attachment EW-9	Tax Form
Attachment F	Master Supplier Form

ATTACHMENT A (FACE SHEET)

**Applicant Profile
State Incentive Grant**

Applicant Organization: _____

Contact Person: _____

Office Address: _____

Phone/Fax: _____

Program Description: _____

Total Funds Requested: _____

ATTACHMENT B

**BUDGET
REDP #11072005**

A.	Personnel	\$_____
B.	Fringe Benefits	\$_____
C.	Travel	\$_____
D.	Consultants/Contracts	\$_____
E.	Supplies	\$_____
F.	Equipment	\$_____
G.	Training	\$_____
H.	Operating Expenses	\$_____
I.	Other Expenses	\$_____
J.	Indirect Cost	\$_____
PROJECT TOTAL		\$_____

ATTACH LINE ITEM BUDGET NARRATIVE

ATTACHMENT C

Collaboration Commitment Form

Please include on this form information about the activities and/or services that will be provided by the collaborating organizations. The application must demonstrate the level of effort for each partner, proposed services, and provide the budget costs of the collaboration in the applicant's proposal submission. This form may be copied if there is more than one partner.

Collaborating Organization(s):

Name

Address

Telephone & Fax Number:

Describe Collaboration(s): (Use additional blank sheets if needed.)

The signatures below indicate that these organizations have collaborated on the development of the application and agree to continue the partnership throughout the implementation of the project as described in this application submission.

Authorized Representative(s)

Type Name(s):

Tel.:

Tel.:

Signature:

Date:

Signature:

Date:

ATTACHMENT D

Work Plan (Logic Model)

RESOURCES	ACTIVITIES	OUTPUTS SHORT	SHORT & LONG- TERM OUTCOMES	IMPACT
<i>In order to accomplish our set of activities we will need the following:</i>	<i>In order to address our problem or asset we will accomplish the following activities:</i>	<i>We expect that once accomplished these activities will produce the following evidence or service delivery:</i>	<i>We expect that if accomplished these activities will lead to the following changes in 1-3 years:</i>	<i>We expect that if accomplished these activities will lead to the following changes in 5-7 years:</i>

APPENDIX 1

Maintaining Your System

Safety

With respect to both maintenance inspections and troubleshooting, a proper knowledge of safety and potential hazards cannot be overemphasized. Service personnel should familiarize themselves with the hazards and safety precautions listed below.

Current and Voltage Safety

Remember that photovoltaic systems produce enough current to cause serious injury.

- Check all safety disconnects for proper operation.
- Insure that all metal parts are grounded.
- Cover the modules when working on them during the day (or work on them at night).

Battery Safety

Special care must be used when working with and around batteries. When charging, lead acid batteries give off hydrogen gasses, which can be highly explosive. Smoking and spark producing activities must be avoided when working around these batteries.

Extra precaution must be taken when disconnecting wiring from batteries when batteries are charging, as this can create sparks and lead to explosions:

- Neutralize lead acid battery acid that gets on the skin with a mixture of baking soda and water.
- Neutralize Ni Cad battery acid that gets on the skin with boric acid or vinegar.
- Ensure that a portable eye wash kit is on hand in case acid is splashed into the eyes. Flush eyes for ten minutes and contact a physician immediately.
- Use eye protection and rubber gloves when working around batteries.

Low voltage batteries can still produce enough short-circuit current to cause physical harm.

Maintenance

All photovoltaic systems must be inspected and maintained on a regular basis. This preventive maintenance ensures that systems are operating effectively and, in many cases, prevents problems from occurring.

Maintenance inspections require a minimal amount of time and are very simple once the procedure is understood and maintenance records are developed. Some of the procedures can be carried out by the system owner, but most should be conducted only by trained technicians familiar with photovoltaic systems, subsystem components and proper safety procedures. A well maintained system is the best insurance against future problems.

General Guidelines

- Inspect system twice per year (Spring and Fall).
- Develop and maintain inspection forms and records.

APPENDIX 2

GLOSSARY

ALTERNATING CURRENT (AC): Electric current (flow of electrons) in which the direction of flow is reversed at constant intervals, such as 60 cycles per second.

AMPERE (AMP or A): A measure of electrical charge that equals the quantity of electricity flowing in one second past any point in a circuit, or defined as one coulomb per second.

AMPERE-HOUR (AMP-HOUR or AHR): A measure of electrical charge that equals the quantity of electricity flowing in one hour past any point in a circuit. Battery capacity is measured in amp-hours.

ARRAY: A collection of photovoltaic modules electrically wired together in one structure to produce a specific amount of power.

AUTONOMOUS OPERATION: Self-contained operation. Capable of existing independently.

AZIMUTH: The angular measure between due south and the point on the horizon directly below the sun.

BALANCE OF SYSTEM (BOS): Components of a photovoltaic system other than the photovoltaic array and load.

CELL (PHOTOVOLTAIC): A semiconductor device that converts light directly into DC electricity.

CHARGE CONTROLLER: A component of a photovoltaic system that controls the flow of current to and from the battery subsystem to protect batteries from overcharge, overdischarge or other control functions. The charge controller may also monitor system operational status.

DIRECT CURRENT (DC): Electric current (flow of electrons) in which the flow is in only one direction.

ENERGY: The capacity for doing work.

GRID-CONNECTED: A photovoltaic system that is connected to a centralized electrical power network such as a utility.

HYBRID SYSTEM: A power system consisting of two or more power generating subsystems.

INSOLATION: The amount of energy in sunlight reaching an area. Usually expressed in watts per square meter (W/m^2), but also expressed on a daily basis as watts per square meter per day ($\text{W/m}^2/\text{day}$).

INVERTER: A device that converts direct current (DC) to alternating current (AC) electricity.

KILOWATT (KW): 1000 watts.

KILOWATT-HOUR (KWH): 1000 watt-hours. A typical residence in the United States consumes about 1000 kilowatt-hours each month at a price in the range of \$.06 to \$.15 per kilowatt-hour.

LIFE CYCLE COST (LCC) ANALYSIS: A form of economic analysis to calculate the total expected cost of ownership over the life span of the system. LCC analysis allows a direct comparison of the costs of alternative energy systems, such as photovoltaics, fossil fuel generators, or the extension of utility power lines.

LOAD: Any device or appliance in an electrical circuit that uses power, such as a light bulb.

MAINTENANCE COSTS: Any costs incurred in the upkeep of a system. These costs may include replacement and repair of components.

MODULE: A number of photovoltaic cells wired together to form a unit, usually in a sealed frame of convenient size for handling and assembling into arrays. Also called a "panel."

OPERATING COSTS: The costs of using a system for a selected period.

PARALLEL CONNECTION: A wiring configuration where positive terminals are connected together and negative terminals are connected together to increase current (amperage).

PEAK SUN HOURS: The equivalent number of hours when solar insolation averages 1000 watts per square meter and produces the same total insolation as actual sun conditions.

PEAK WATTS (WP): The maximum power (in watts) a solar array will produce on a clear, sunny day while the array is in full sunlight and operating at 25°C. Actual wattage at higher temperatures is usually somewhat lower.

PHOTOVOLTAIC (PV) SYSTEM: A complete set of interconnected components for converting sunlight into electricity by the photovoltaic process, including array, balance-of-system components, and the load.

POWER: The rate of doing work or energy is consumed or generated. Power is measured in watts or horsepower.

POWER CONDITIONER: The electrical equipment used to convert electrical power from a photovoltaic array into a form suitable for subsequent use, such as an inverter, transformer, voltage regulator, and other power controls.

SERIES CONNECTION: A wiring configuration in which the negative terminal of one module is connected to the positive terminal of the next module to increase voltage.

SILICON: A non-metallic element, the basic material of beach sand and the raw material used to manufacture most photovoltaic cells.

STAND-ALONE PHOTOVOLTAIC SYSTEM: A solar electric system, commonly used in a remote location, that is not connected to the main electric grid (utility). Most stand-alone systems include some type of energy storage, such as batteries.

VOLTAGE (V): A measure of the force or "push" given the electrons in an electrical circuit; a measure of electric potential. One volt produces one amp of current when acting against a resistance of one ohm.

WATT (W): A measure of electric power or amount of work done in a unit of time and equal to the rate of current flow (amps) multiplied by the voltage of that flow (volts). One amp of current flowing at a potential of one volt produces one watt of power.

WATT-HOUR (WH): A measure of electrical energy equal to the electrical power multiplied by the length of time (hours) the power is applied.